Emergency Management Plan For An Extended Power Outage Guidance Document

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VDH VIRGINIA DEPARTMENT OF HEALTH
Protecting You and Your Environment

The Interim Emergency Management Plan Guidance Document was prepared by the Office of Drinking Water (ODW) with assistance from members of the Waterworks Advisory Committee.

The approaches described in this guide are recommendations to be used in conjunction with the development of an emergency management plan to meet the requirements of 12 VAC 5-590-505. If you have suggestions on how to improve this guide please send an e-mail or letter to the following address until August 31, 2005:

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All suggestions will be considered for the Emergency Management Plan Final Document to be released by the end of 2005.

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Appendices

I. Executive Summary

On April 14, 2004 the Virginia General Assembly enacted HB 1198 which requires the Virginia Department of Health (VDH) to promulgate requirements and criteria for the development and maintenance of an emergency management plan to ensure the provision of pure water during any extended power outage for every community waterworks. This emergency regulation does not require a waterworks to install standby power, transfer switches, etc., but instead requires waterworks to develop and maintain an action plan for extended power outages.

A VDH workgroup, comprised of VDH staff and members from the Waterworks Advisory Committee was convened in April 2004 to develop the draft language for this emergency regulation. Emergency regulation language was developed and submitted via the APA process in August 2004. Next, modifications were made at the advice of legal counsel. The emergency regulation was signed by the Governor in December 2004 and can be found at http://www.townhall.virginia.gov/Action/ViewAction.cfm?Action=1640.

The VDH workgroup recommended that a guidance document and template be developed to assist community waterworks in complying with the regulatory requirement. The guidance provided in this document includes a checklist template, a certification letter, examples and reference material that can be used to fulfill this requirement.

The guidance addresses all community waterworks. Community waterworks will be grouped by population: those serving less than 3,300 persons and those serving 3,300 or more persons.

II. Glossary

Board – means the State Board of Health.

Boil Water Notice – notice to all customers or consumers of affected waterworks not to drink water without first boiling water for at least 1 full minute. A notice could be issued due to positive sampling of bacteria or as a precautionary measure during the response phase of a natural disaster or a terrorist act.

Disinfection – means a process which inactivates pathogenic organisms in water by chemical oxidants or equivalent agents.

Emergency Management Plan (EMP) – for the purposes of this document, a plan of actions that outlines the steps that a waterworks takes to operate under an extended power outage condition.

Extended Power Outage – an extended power outage is a loss of power that causes an interruption in a waterworks ability to provide water to its customers.

Emergency Response Plan (ERP) – includes plans, procedures, and identification of equipment that can be implemented or utilized in the event of a terrorist or other intentional attack on the CWS. The ERP also must include actions, procedures, and identification of equipment which can obviate or significantly lessen the impact of terrorist attacks or other intentional actions on the public health and the safety and supply of drinking water provided to communities and individuals.

Geographic Information System (GIS) – consists of a database(s) of information linked to a map location that can be used to make decisions.

Hypochlorite – means a solution of water and some form of chlorine, usually sodium hypochlorite.

Local Emergency Coordinator – person designated by the Virginia Department of Emergency Management as official representative of a county or city during an emergency situation.

Pure Water – means water fit for human consumption and domestic use which is sanitary and normally free of minerals, organic substances, and toxic agents in excess of reasonable amounts for domestic usage in the area served and normally adequate in quantity and quality for the minimum health requirements of the persons served (see Article 2 (§32.1-167 et seq.) of Chapter 6 of Title 32.1 of the Code of Virginia).

ODW – Office of Drinking Water.

VDH – Virginia Department of Health.

Vulnerability Assessment – a systematic process for evaluating the susceptibility of critical facilities to potential threats and identifying corrective actions that can reduce or mitigate the risk of serious consequences associated with these threats.

III. Introduction

The question might be asked, why is there a perceived need to require all community waterworks to develop and maintain an emergency management plan addressing any extended power outage? First, one must recognize that the ability to provide potable water is critical to maintaining public health and preventing disease. Second, one must recognize the threat that a lack of planning for such events can cause to public health. Third, one needs to think about the nature of incidents that cause extended power outages (Ice storms, Hurricanes, Tornadoes, Flooding, Terrorism, Vandalism, Blackouts, etc.). Looking at a series of events that have occurred in Virginia in the last decade would start to answer that question.

Ice storms are an ever present threat in all of Virginia. On December 23, 1998, the so-called Christmas Eve Ice Storm struck central and southeast Virginia beginning on Wednesday, December 23 and lasting into Friday, December 25, Christmas Day. Ice accumulations of up to an inch brought down trees and power lines. Outages were so widespread (401,000 customers on Christmas Eve) that some people were without power for up to 10 days. Another ice storm hit on January 30, 2000. The so-called Super Bowl Storm blanketed freezing rain over parts of Virginia that brought down trees and power lines, subsequently knocking out power to 285,000 customers for up to four days.

Hurricanes, Tropical Storms, Tropical Depressions can strike anywhere in the Commonwealth, but are more prevalent closer to the coast. Nearly each year Virginia is struck by one of these storm types. A major hurricane strikes about once every thirty years. During the past ten years several hurricanes have impacted power supplies in Virginia. In 1996 Hurricane Fran passed through southeast Virginia disrupting power to 540,000 customers for up to six days. In 1999 Hurricane Floyd passed through southeast Virginia causing extensive flooding and property damage, knocking out power to 730,000 customers for up to five days. On September 18, 2003 Hurricane Isabel impacted the east coast and then moved inland up through Virginia as a major tropical storm. The aftermath caused over 2 million customers to lose power, some for up to sixteen days and eighteen percent of the community waterworks in Virginia to issue a boil water notice as a precautionary measure.

Tornadoes are another threat. They form in association with powerful thunderstorms, hurricanes, tropical storms and depressions. Based on statistics, the actual average number of tornadoes that Virginia likely will experience in a year is between fifteen and twenty. In 2004 Virginia reported nearly double that average due to the number of storms that passed through the state. Tornadoes in Virginia sometimes cause localized short-term power outages, mostly during warmer months (April – September).

Flooding, like tornadoes, is often associated with powerful thunderstorms, hurricanes, tropical storms and depressions. Extreme flooding can cause power failure due to trees being uprooted and falling onto power lines and inundation of power substations.

Terrorism, Vandalism, and Blackouts have a very low probability of occurrence but can't be ruled out because they are considered real threats to disrupt power supply. The August 2003 Northeast Blackout event affected parts of Canada and a large number of states in America. Millions of consumers were left without power, and waterworks were forced to issue advisory boil water notices due to low pressure conditions caused by lack of emergency standby power at critical infrastructure assets.

Given the likelihood that an extended power outage could occur at any time during the year and the documented past history of these events occurring in Virginia, waterworks as well as other power utility customers need to develop a plan of action in preparation for extended power outage occurrences to maintain the protection of public health.

IV. Emergency Management Plan for Extended Power Outages

All community public waterworks serving 3,300 people or more were required to conduct a vulnerability assessment and either prepare or revise, where necessary, an Emergency Response Plan (ERP) that incorporates the results of their vulnerability assessment. This federal requirement impacted about 150 community waterworks in Virginia out of a possible 1,300. A variety of situations may have been planned for by waterworks that developed an ERP or some other type of emergency operating procedures manual. Many components of the EMP regulation may have already been covered in these prepared plans. However, waterworks serving a

population of less than 3,300 were not required to prepare assessments or response plans. Therefore, those waterworks may need to develop a plan or modify whatever plan does exist.

The Emergency Management Plan for Extended Power Outages emergency regulation establishes the expectation that community waterworks will develop an EMP outlining how the waterworks will supply pure water to its customers in the event of an extended power outage. Community waterworks are expected to supply pure water to their customers during an extended power outage, although not necessarily at the usual quantity, pressure and location, or without interruption. For the purposes of the EMP, community waterworks may not (without an agreement in place) rely on other state or federal agencies (such as the Virginia Department of Emergency Management (VDEM), or the Federal Emergency Management Agency (FEMA)) to supply water in the event of an extended power outage.

VDH envisions the EMP to include several components: a key contacts checklist, a management plan (EMP Template) located in Section VI, and a certification letter (EMP Certification of Completion) located in Section VII. To ease the workload, VDH has developed a sample template that can be used to complete the items. The template is designed to be completed by the waterworks staff. The EMP template which has been developed lists the contact information for all key staff, suppliers, local and state officials, etc. The Certification is to be used to certify to VDH that the plan has been completed. The challenge to the waterworks is the development of a sound management plan to follow during an extended power outage event. The management plan should walk the waterworks through preparation, response, and recovery from an extended power outage. The preparation of an EMP that follows the EMP template and submission of the Certification of Completion would meet the requirements of the EMP regulation.

A. Suggested Way to Create an EMP

First, each waterworks should identify key contacts and list them in the front of the EMP for easy access. Next, describe any existing emergency plans or provisions to supply water. Evaluate and implement preventative measures (listed in Section V) as applicable. Waterworks should also see Appendix G for sample scenarios that may be similar to their situation. Next,

evaluate demand considering various scenarios, including average daily demand, maximum daily demand, demand based on a power failure in the service area, and demand based on asking the service area to conserve water. Then, perform a historical records review/outage summary to identify the occurrence, cause and amount of time (hours, days, weeks) involved for each documented power outage. This will help in determining the probability of occurrence. Next, perform a What-If-Analysis on each of the waterworks assets. Assets include each water source, pump station, storage tank, wholesale water provider(s), etc., and/or a combination of some or all of the aforementioned. Based on factors such as available system storage, various levels of demand, available system resources, and available consecutive connections, the waterworks should develop and evaluate each scenario to determine when the waterworks would be unable to maintain system pressure (minimum 20 psi) or if the waterworks could operate indefinitely. For the scenarios that the waterworks was unable to operate indefinitely, the waterworks should estimate the amount of time the waterworks is likely to be able to maintain system pressure.

Once this is done, the waterworks will be able to select the necessary planning period to be used for their waterworks. The minimum planning period to be selected shall be five days. Develop a plan of response to provide water based on the planning period selected. This information should be placed in the management plan. Assemble all components of the plan using the template in Section VI.

The EMP should be written to address the current configuration of the waterworks. Upon completion of changes to the waterworks, such as addition of a new water source, pumping station, storage tank, consecutive connection, installation of emergency standby power the EMP should be reviewed and updated.

B. Tiered Approach to Invoking the EMP

In the event of a perceived extended power outage, an affected waterworks should begin implementation of their EMP when it is determined the loss of power will likely cause an interruption in the waterworks ability to provide safe and pure water. A sample incident log can be found in Appendix E. Therefore, it is understood that a waterworks may have already activated one or more activities in preparation for forecasted events such as hurricanes or tropical storms.

The timing of activation will vary from waterworks to waterworks depending on local factors such as size of waterworks, proximity to predicted damage, availability of emergency standby power, etc. VDH does not have a standard timeframe in which waterworks are required to activate a plan. However, once a plan is activated one of the steps required by the EMP regulation is to notify VDH. Preparation for an event to happen is the most important step in response and recovery.

If a waterworks is likely to be able to maintain system pressure for a period of time, (say for the initial 24 hours of power failure under the scenario) then the waterworks need not immediately implement all EMP procedures, but can do so in a tiered or sequential manner.

Upon identification of a power failure, the waterworks must assess the situation to determine if the power failure is likely to become an Extended Power Outage. Initially, the waterworks should identify the status of water sources, pumping stations, storage tanks, consecutive connections and wholesale customers, estimate current demand, and estimate the amount of time the waterworks is likely to be able to maintain pressure. The waterworks should also coordinate with the power supplier to obtain an estimate of the likely time to restore the power.

Based on the findings, the waterworks would take an action such as:

1. Implement the EMP procedure (such as prepare/start emergency power or open a consecutive connection)
2. Notify waterworks customers to conserve water
3. Continue to monitor the situation

Waterworks that do not implement the EMP procedures must continue to monitor the situation, re-evaluate the facts to determine if the EMP procedures must be implemented.

C. Submitting the Certification of Completion

Once the EMP is complete, it is necessary for each waterworks to notify VDH that they have completed their EMP and to certify that it meets all of the requirements set forth in 12 VAC 5-590-505. Fill out and submit template found in Section VII to VDH. Submittal should be via original signed copy and sent to the appropriate VDH field office.

D. Plan Testing and Revision

1. Once the plan is complete, test your plan with exercises or drills.
   - No plan is infallible. Knowing what to do and who is supposed to be doing what will benefit your waterworks when a real event occurs.
   - Call each telephone number in the plan to confirm it is correct.
2. Update your plan as needed.
   - This is an important measure of whether a plan will be successful. If the plan has outdated or irrelevant contact information, it could waste valuable time trying to find the right equipment or contact.
3. Notify customers of the existence of the plan. Ask for comments on the plan or assistance in implementing the plan. Include mention of the plan in Consumer Confidence Report.

V. Preventative Measures to Lessen Impacts of an Extended Power Outage

Upon review many waterworks will determine that some of the following preventative measures may significantly reduce the impacts of an extended power outage. Although not a requirement, some waterworks have already implemented some of the following measures.

1. Have an electrical contractor perform an analysis of your waterworks operation for the following:
   - Identify critical use components, load requirements, and size(s) of emergency generator that would be needed to run system.
2. Install emergency standby power.
   - Generators offer great benefits when power outages occur. They could prove especially useful if you have a small rural waterworks.
3. Install transfer switch or switches and generator receptacle so portable generators can be easily hooked up to the waterworks.
   - Have a system electrical assessment performed to evaluate adding a transfer switch or standby generator.
   - Develop a rotational use schedule for multiple well sites as applicable. Add to the EMP.
4. Contact your electrical supplier to be placed on a list of importance or priority for reestablishing power service if your waterworks serves any critical customers such as a nursing homes, hospitals, major pumping station, military installation, etc. (see Appendices H, I, & J for more details). In advance of a power failure, learn the best way to contact your electrical supplier. See Appendix D.

VI. Emergency Management Plan for An Extended Power Outage Template

Waterworks Name: _____

Date Drafted: _____ Date of Last Revision: _____

A. Key Contacts List

State Contacts

Virginia Department of Health/Office of Drinking Water _____
24 hour emergency # 1-800-608-3212

*****Virginia Department of Health/Local Health Manager _____
24 hour emergency # _____

Waterworks Contacts

1st Contact Person _____ Phone # _____
Title _____ Cell/Pager# _____

2nd Contact Person _____ Phone # _____
Title _____ Cell/Pager# _____

3rd Contact Person _____ Phone # _____
Title _____ Cell/Pager# _____

Wholesale Water Supplier Contacts

Name of Supplier: _____

1st Contact Person _____ Phone # _____
Title _____

2nd Contact Person _____ Phone # _____
Title _____

3rd Contact Person _____ Phone # _____
Title _____

Local Emergency Coordinator Contacts

Name _____ Title _____
Phone # _____ 24 hour emergency # _____

Energy Suppliers

Electric _____ Account # _____
24 hour emergency # _____

Gas _____ Account # _____
24 hour emergency # _____

***** - Optional but suggested information to obtain and keep current if part of plan.
Propane _____ Account # _____
24 hour emergency # _____
Other _____ Account # _____
24 hour emergency # _____

Media Contacts – Add additional if multiple
Radio Station _____ Phone # _____
Television Station _____ Phone # _____
Newspaper _____ Phone # _____

***Electrician**
Contact Person _____ Company _____
Phone # _____ 24 hour emergency # _____

***Company that can supply water tankers**
Contact Person _____ Company _____
Phone # _____ 24 hour emergency # _____

***Company that can supply an emergency generator**
Contact Person _____ Company _____
Phone # _____ 24 hour emergency # _____

***Attach specifications for emergency generator**

***Neighboring Waterworks that has Mutual Aid Agreement**
Contact Person _____ Waterworks _____
Phone # _____ 24 hour emergency # _____

***Pump Information**
Pump Supplier _____ Phone # _____
Contact Person _____ 24 hour emergency # _____

Pump location _____
Make & model # _____

Pump maintenance & repair service _____
Contact Person _____ Phone # _____
24 hour emergency # _____

***Backhoe Service**
Contact Person _____ Company _____
Phone # _____ 24 hour emergency # _____

***Tree Removal Service**
Contact Person _____ Company _____
Phone # _____ 24 hour emergency # _____

B. Description or Location of Current EMP Provisions to Supply Water

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

C. Preventative Measures Implemented

_____
_____
_____
_____
_____

D. Evaluation of Demand

Average Daily Demand _____
Maximum Daily Demand _____
Daily Demand (service area without power) _____
Daily Demand (conserve water advisory)_____

E. Historical Outage Summary (attached as needed)

Event:_____**Duration:**_____
Event:_____**Duration:**_____
Event:_____**Duration:**_____
Event:_____**Duration:**_____
Occurance/Probability Notes: _____
_____
_____

***F. Perform What If Analysis (Test assets for ability to maintain pressure)**

Location of What-if Analysis_____

***G.Selected Extended Outage Planning Period (if greater than five days)**

_____

H. Selected EMP Plan Components (add attachments as needed)

VII. Certification of Completion of An Emergency Management Plan for An Extended Power Outage

Waterworks Name: _____

Public Water System ID Number: _____

County or City Where Waterworks is Located: _____

Printed Name of Person Authorized to Sign this Certification

on Behalf of the Waterworks: _____

Title: _____

Address: _____

City: _____

State and ZIP Code: _____

Phone: _____

Fax: _____

Email: _____

I certify to the State Health Commissioner that this community waterworks has completed an Emergency Management Plan for Extended Power Outages that incorporates the required elements outlined in the Virginia Waterworks Regulations Section 12 VAC 5-590-505.

Signed: _____ Date: _____

VII. Certification of Completion of An Emergency Management Plan for An Extended Power Outage

Primary Contact Person That VDH Can Reach If There Are Questions About This Certification:

Name: _____

Address (if different than that of the Authorized Representative):_____

_____

Phone:_____

Email Address:_____

Alternate Contact Person:

Name: _____

Address (if different than that of the Authorized Representative):_____

_____

Phone:_____

Email Address:_____

VIII. References

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